

PATENT ABSTRACTS OF JAPAN

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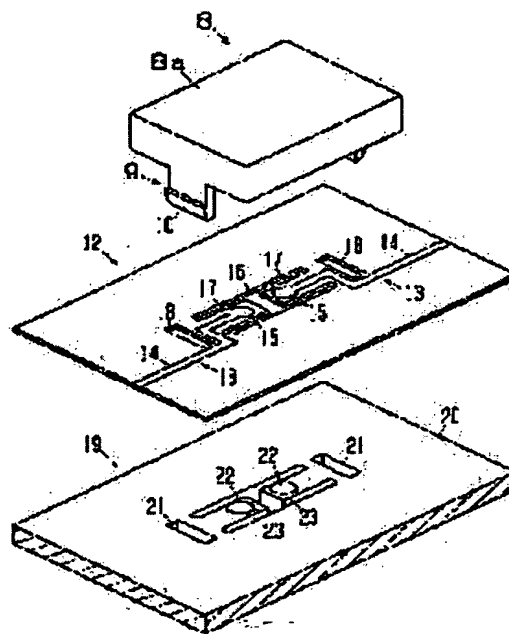
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(54) CONNECTING STRUCTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To connect a circuit board and a flexible wiring board to each other without using solder by installing a case body housing the circuit board in a housing, and pressing a terminal part of the flexible wiring board against the circuit board by an elastic part of the housing.

SOLUTION: A flexible wiring board 12 has a wiring pattern 13 composed of copper on a flexible base board, and the wiring pattern 13 is composed of a wiring part 14 and a terminal part 15, and a notch 16 is arranged on a periphery of the terminal part 15, and a terminal piece 17 is formed, and an opening 18 is provided. Gauges such as a speedometer and a tachometer are housed in a housing 19, and an opening 21 is arranged in a bottom plate 20, and an elastic part 23 having a projection 22 opposed to the terminal part 15 is provided. The opening 21 of the housing 19 is engaged with an elastic locking part 9 of a case body 8 housing a circuit board through an opening 18 of the flexible wiring board 12, and when the case body 8 is installed in the housing 19, the projection 22 of the housing 19 presses the terminal part 15 of the flexible wiring board 12 against the circuit board, and the circuit board and the flexible wiring board 12 are connected to each other.



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CLAIMS

[Claim(s)]

[Claim 1] Connection structure characterized by having the circuit board, the flexible patchboard which has the terminal area connected with said circuit board, and housing which has the elastic section which is prepared in said terminal area and a corresponding part, and forces said terminal area on said circuit board.

[Claim 2] Connection structure characterized by having housing which has the elastic section which forces said terminal area on said circuit board when it is prepared in a case object, the circuit board contained by said case object, the flexible patchboard which has the terminal area connected with said circuit board, and said terminal area and a corresponding part and equips with said case object.

[Claim 3] The connection structure characterized by to have housing which has the elastic section which forces said terminal area on said circuit board when it is prepared in the case object which has the first stop section, the circuit board contained by said case object, the flexible patchboard which has the terminal area connected with said circuit board, the second stop section by which said first stop section is stopped, said terminal area, and a corresponding part and equips with said case object.

[Claim 4] It is the connection structure characterized by having notching by which said flexible patchboard was formed around said terminal area in claim 1 and connection structure according to claim 2 or 3.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the connection structure of connecting especially the circuit board and a flexible patchboard, about connection structure.

[0002]

[Description of the Prior Art] Conventionally the connection structure of connecting the circuit board and a flexible patchboard is proposed variously, for example, it is indicated by JP,63-314784,A. As this connection structure is shown in drawing 4, the circuit board 2 contained by the case object 1 and the flexible patchboard 4 ****(ed) by housing 3 are connected. The terminal assembly 5 which carried out crookedness formation of the conductive plate which has elasticity is attached in the case object 1, and housing 3 is equipped with the case object 1.

[0003]

[Problem(s) to be Solved by the Invention] If housing 3 is equipped with the case object 1, the pressure welding of the first contact 6 will be carried out to the circuit board 2 by the elastic force of a terminal assembly 5, the pressure welding of the second contact 7 will be carried out to the flexible patchboard 4, and the circuit board 2 will be connected with the flexible patchboard 4. Although it had the advantage that this connection structure had an unnecessary soldering process, the terminal assembly 5 was needed and it had the problem that the number of components will increase. This invention can connect the circuit board and a flexible patchboard, without using solder, and offers connection structure without the awe which the number of components increases.

[0004]

[Means for Solving the Problem] This invention has housing which has the circuit board, the flexible patchboard which has the terminal area connected with said circuit board, and the elastic section which is prepared in said terminal area and a corresponding part, and forces said terminal area on said circuit board in order to solve said technical problem.

[0005] This invention has housing which has a case object, the circuit board contained by said case object, the flexible patchboard which has the terminal area connected with said circuit board, and the elastic section which forces said terminal area on said circuit board when it is prepared in said terminal area and a corresponding part and equips with said case object.

[0006] Moreover, this invention has housing which has the elastic section which forces said terminal area on said circuit board, when it is prepared in the case object which has the first stop section, the circuit board contained by said case object, the flexible patchboard which has the terminal area connected with said circuit board, the second stop section by which said first stop section is stopped, said terminal area, and a corresponding part and equips with said case object.

[0007] Moreover, this invention has notching by which said flexible patchboard was formed around said terminal area.

[0008]

[Embodiment of the Invention] The circuit board 11 is contained on the case object 8 which has the 1st stop section 9. When the elastic section 23 is formed in the housing 19 by which the flexible patchboard 12 is ****(ed) and housing 19 is equipped with the case object 8, the terminal area 15 of the flexible patchboard 12 is forced on the circuit board 11, and the circuit board 11 and the flexible patchboard 12 are connected.

[0009]

[Example] Hereafter, one example of this invention is explained based on an attached drawing. Drawing 1 is a decomposition perspective view and drawing 2 is a sectional view.

[0010] 8 is a case object and this case object 8 consists of resin (for example, polypropylene). The elastic stop section 9 (1st stop section) in which the case object 8 hung from case section 8a is formed in one, and this elastic stop section 9 has the stop pawl 10. 11 is the circuit board and this circuit board 11 forms the circuit pattern which consists of copper on a hard substrate (for example, glass epoxy group plate). The circuit board 11 is contained by the case object 10.

[0011] 12 is a flexible patchboard and this flexible patchboard 12 forms the circuit pattern 13 which consists of copper on a flexible substrate (for example, polyimide substrate). A circuit pattern 13 consists of the wiring section 14 and a terminal area 15, notching 16 is formed around a terminal area 15, and the terminal strip 17 is formed. Moreover, the flexible patchboard 12 has opening 18 and the elastic stop section 9 of the case object 8 penetrates it.

[0012] 19 is instrument housing (housing) and this instrument housing 19 consists of resin (for example, polypropylene). Instruments which are not illustrated, such as a speedometer and a tachometer, are contained by the instrument housing 19. Opening 21 (second stop section) is formed in the bottom plate 20 of the instrument housing 19, and the elastic stop section 9 is stopped by this opening 21. Moreover, the elastic section 23 of the shape of a cantilever to which the bottom plate 20 of the instrument housing 19 has projection 22 in the terminal area 15 of the flexible patchboard 12 and a corresponding part is formed.

[0013] If the instrument housing 19 is equipped with the case object 8, the elastic section 23 will bend, projection 22 will force the terminal area 15 of the flexible patchboard 12 on the circuit board 11, and the circuit board 11 and the flexible patchboard 12 will be connected. Therefore, it is not necessary to use the terminal assembly 5 which can connect the circuit board 11 and the flexible patchboard 12, without using solder, and was explained in the conventional example, and there is no awe which the number of components increases. When put in another way, by having formed the elastic section 23 in the instrument housing 19, and having given the elasticity which the conventional terminal assembly 5 had to the elastic section 23, the terminal assembly 5 was made unnecessary and the number of components was reduced.

[0014] According to the example described above, while equipping the instrument housing 19 with the case object 8, the circuit board 11 and the flexible patchboard 12 are connectable, and it can connect easily, without using the terminal assembly 5 explained in solder or the conventional example.

[0015] In addition, although I hope that there is no notching 16 of the flexible patchboard 12 (refer to drawing 3), it is desirable to form notching 16 so that a terminal strip 17 can be crooked free like this example. Moreover, although this example stopped the elastic stop section 9 of the case object 8, and the opening 18 of the instrument housing 19, it may prepare the elastic stop section, for example in the instrument housing 19, and may prepare opening in the case object 8. Moreover, although the instrument housing 19 may be equipped with the case object 8, for example using a screw etc., if it is made to make the instrument housing 19 stop the case object 8 like this example, the instrument housing 19 can be easily equipped with the case object 8. Moreover, the case object 8 of there being nothing is good, for example, may equip the instrument housing 19 with the circuit board 11 using a screw etc.

[0016]

[Effect of the Invention] This invention is [0017] without the awe which has the circuit board, the flexible patchboard which has the terminal area connected with said circuit board, and housing which has the elastic section which is prepared in said terminal area and a corresponding part, and forces said terminal area on said circuit board, and can connect the circuit board and a flexible patchboard, without using solder, and the number of components increases. Moreover, this invention is [0018] without the awe which can connect the circuit board and a flexible patchboard, without having housing which has a case object, the circuit board contained by said case object, the flexible patchboard which has the terminal area connected with said circuit board, and the elastic section which forces said terminal area on said circuit board when it is prepared in said terminal area and a corresponding part and equips with said case object, and using solder, and the number of

components increases. Moreover, the circuit board by which this invention is contained by the case object which has the first stop section, and said case object, It is what has housing which has the elastic section which forces said terminal area on said circuit board when it is prepared in the flexible patchboard which has the terminal area connected with said circuit board, the second stop section by which said first stop section is stopped, said terminal area, and a corresponding part and equips with said case object. The circuit board and a flexible patchboard can be connected without using solder, and there is no awe which the number of components increases, and housing can be easily equipped with a case object.

[0019] Moreover, this invention has notching by which said flexible patchboard was formed around said terminal area, and a terminal strip can be crooked free.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The decomposition perspective view showing the example of this invention.

[Drawing 2] The sectional view showing an example same as the above.

[Drawing 3] The decomposition perspective view showing other examples of this invention.

[Drawing 4] The sectional view showing the conventional example.

[Description of Notations]

8 Case Object

9 Elastic Stop Section (First Stop Section)

11 Circuit Board

12 Flexible Patchboard

19 Instrument Housing (Housing)

21 Opening (Second Stop Section)

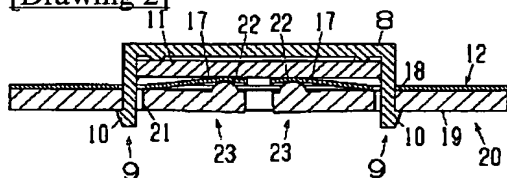
23 Elastic Section

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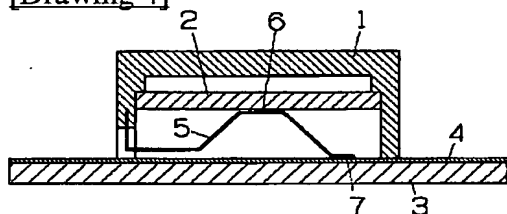
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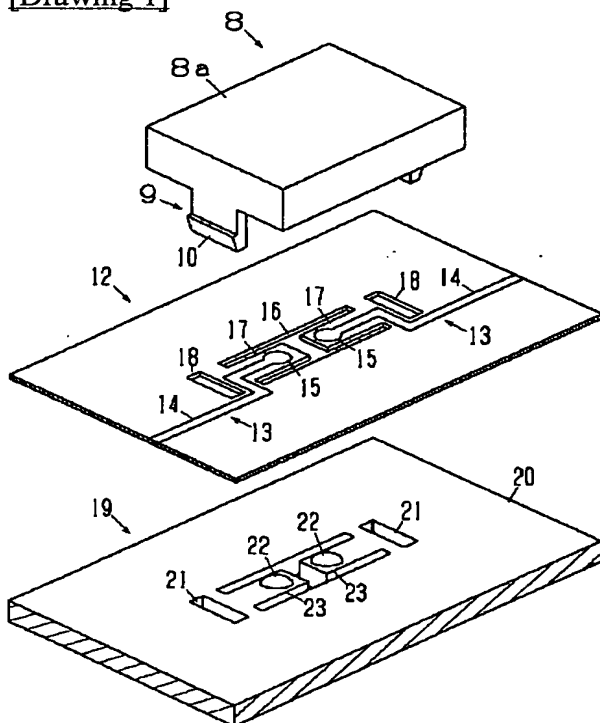
[Drawing 2]



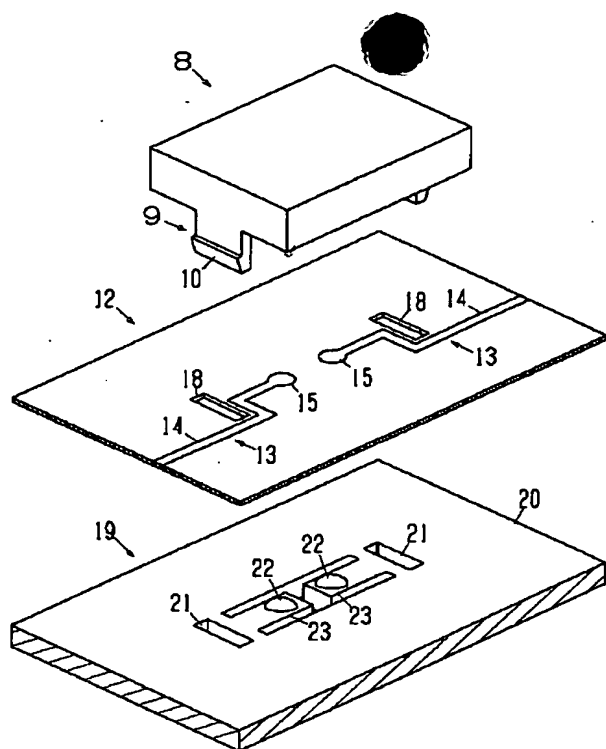
[Drawing 4]



[Drawing 1]



[Drawing 3]



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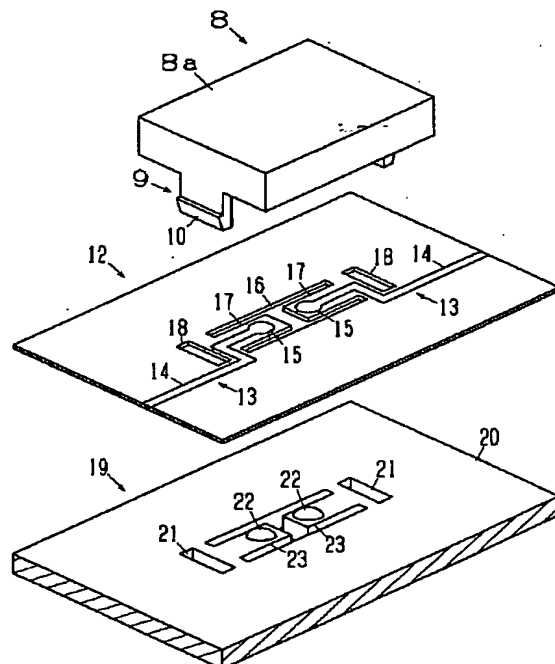
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(54) 【発明の名称】 接続構造

(57) 【要約】

【課題】 半田を用いることなく回路基板と可撓性配線板とを接続でき、部品数が増加する恐れがない接続構造を提供する。

【解決手段】 第1の係止部9を有するケース体8に回路基板11を収納する。可撓性配線板12が沿設されるハウジング19には弾性部23が設ける。ケース体8をハウジング19に装着するときに、可撓性配線板12の端子部15を回路基板11に押付け、回路基板11と可撓性配線板12とを接続する。



【特許請求の範囲】

【請求項1】 回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記端子部を前記回路基板に押付ける弾性部を有するハウジングと、を有することを特徴とする接続構造。

【請求項2】 ケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部を有するハウジングと、を有することを特徴とする接続構造。

【請求項3】 第一の係止部を有するケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記第一の係止部が係止される第二の係止部と前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有することを特徴とする接続構造。

【請求項4】 請求項1、請求項2または請求項3に記載の接続構造において、前記可撓性配線板は前記端子部の周辺に形成された切り欠きを有することを特徴とする接続構造。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、接続構造に関するものであり、特に回路基板と可撓性配線板とを接続する接続構造に関するものである。

【0002】

【従来の技術】 従来より、回路基板と可撓性配線板とを接続する接続構造が種々提案され、例えば特開昭63-314784号公報に開示されている。斯かる接続構造は、図4に示すように、ケース体1に収納された回路基板2とハウジング3に沿設された可撓性配線板4とを接続するものである。ケース体1には弾性を有する導電性板材を屈曲形成した端子板5が取付けられており、ケース体1はハウジング3に装着される。

【0003】

【発明が解決しようとする課題】 ケース体1をハウジング3に装着すると、端子板5の弾性力により第一の接点6が回路基板2に圧接され第二の接点7が可撓性配線板4に圧接され、回路基板2が可撓性配線板4と接続される。この接続構造は半田付け工程が不要であるという利点を有するが、端子板5が必要になり、部品数が増加してしまうという問題を有していた。本発明は、半田を用いることなく回路基板と可撓性配線板とを接続でき、部品数が増加する恐れがない接続構造を提供するものである。

【0004】

【課題を解決するための手段】 本発明は、前記課題を解

決するため、回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有するものである。

【0005】 本発明は、ケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有するものである。

【0006】 また、本発明は、第一の係止部を有するケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記第一の係止部が係止される第二の係止部と前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有するものである。

【0007】 また、本発明は、前記可撓性配線板は前記端子部の周辺に形成された切り欠きを有するものである。

【0008】

【発明の実施の形態】 第1の係止部9を有するケース体8に回路基板11を収納する。可撓性配線板12が沿設されるハウジング19には弾性部23が設けられており、ケース体8をハウジング19に装着するときに、可撓性配線板12の端子部15を回路基板11に押付け、回路基板11と可撓性配線板12とを接続する。

【0009】

【実施例】 以下、添付の図面に基づいて本発明の一実施例を説明する。図1は分解斜視図であり、図2は断面図である。

【0010】 8はケース体であり、このケース体8は樹脂（例えばポリプロピレン）からなるものである。ケース体8は筐体部8aから垂下した弾性係止部9（第1の係止部）が一体に形成されており、この弾性係止部9は係止爪10を有している。11は回路基板であり、この回路基板11は硬質基板（例えばガラスエポキシ基板）上に銅からなる配線パターンを形成したものである。回路基板11はケース体10に収納されている。

【0011】 12は可撓性配線板であり、この可撓性配線板12は可撓性基板（例えばポリイミド基板）上に銅からなる配線パターン13を形成したものである。配線パターン13は配線部14と端子部15とからなり、端子部15の周辺には切り欠き16が設けられ端子片17が形成されている。また、可撓性配線板12は開口18を有しており、ケース体8の弾性係止部9が貫通するようになっている。

【0012】 19は計器ハウジング（ハウジング）であり、この計器ハウジング19は樹脂（例えばポリプロピレン）からなるものである。計器ハウジング19には図示しない速度計、回転計等の計器が収納されている。計器ハ

ウジング19の底板20には開口21（第二の係止部）が設けられており、この開口21に弾性係止部9が係止される。また、計器ハウジング19の底板20は可撓性配線板12の端子部15と対応する個所に突起22を有する片持ち梁状の弾性部23が設けられている。

【0013】ケース体8を計器ハウジング19に装着すると、弾性部23が撓み、突起22が可撓性配線板12の端子部15を回路基板11に押付け、回路基板11と可撓性配線板12とが接続される。従って、半田を用いることなく回路基板11と可撓性配線板12とを接続でき、また、従来例で説明したような端子板5を用いる必要がなく、部品数が増加する恐れがない。換言すると、計器ハウジング19に弾性部23を設け、従来の端子板5が有していた弾性を弾性部23に持たせたことにより、端子板5を不要とし部品数を低減した。

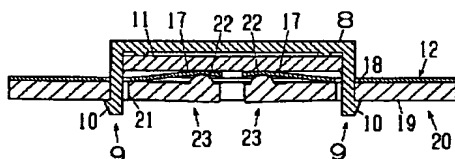
【0014】以上述べた実施例によれば、ケース体8を計器ハウジング19に装着するとともに回路基板11と可撓性配線板12とを接続することができ、半田や従来例で説明した端子板5を用いることなく、容易に接続を行うことができる。

【0015】なお、可撓性配線板12の切り欠き16はなくとも良いが（図3参照）、本実施例のように端子片17が自在に屈曲できるように切り欠き16を設けることが望ましい。また、本実施例は、ケース体8の弾性係止部9と計器ハウジング19の開口18とを係止させるものであったが、例えば計器ハウジング19に弾性係止部を設けケース体8に開口を設けても良い。また、例えばケース体8をビス等を用いて計器ハウジング19に装着しても良いが、本実施例のようにケース体8を計器ハウジング19に係止させるようにすれば、容易にケース体8を計器ハウジング19に装着することができる。また、ケース体8はなくとも良く、例えば回路基板11をビス等を用いて計器ハウジング19に装着しても良い。

【0016】

【発明の効果】本発明は、回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記端子部を前記回路基板に*

【図2】



* 押付ける弾性部を有するハウジングと、を有するものであり、半田を用いることなく回路基板と可撓性配線板とを接続でき、部品数が増加する恐れがない

【0017】また、本発明は、ケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有するものであり、半田を用いることなく回路基板と可撓性配線板とを接続でき、部品数が増加する恐れがない

【0018】また、本発明は、第一の係止部を有するケース体と、前記ケース体に収納される回路基板と、前記回路基板と接続される端子部を有する可撓性配線板と、前記第一の係止部が係止される第二の係止部と前記端子部と対応する個所に設けられ前記ケース体を装着するときに前記端子部を前記回路基板に押付ける弾性部とを有するハウジングと、を有するものであり、半田を用いることなく回路基板と可撓性配線板とを接続でき、部品数が増加する恐れがなく、且つ、容易にケース体をハウジングに装着することができる。

【0019】また、本発明は、前記可撓性配線板は前記端子部の周辺に形成された切り欠きを有するものであり、端子片が自在に屈曲できる。

【図面の簡単な説明】

【図1】本発明の実施例を示す分解斜視図。

【図2】同上実施例を示す断面図。

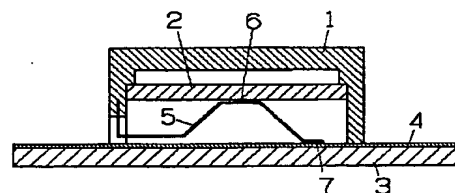
【図3】本発明の他の実施例を示す分解斜視図。

【図4】従来例を示す断面図。

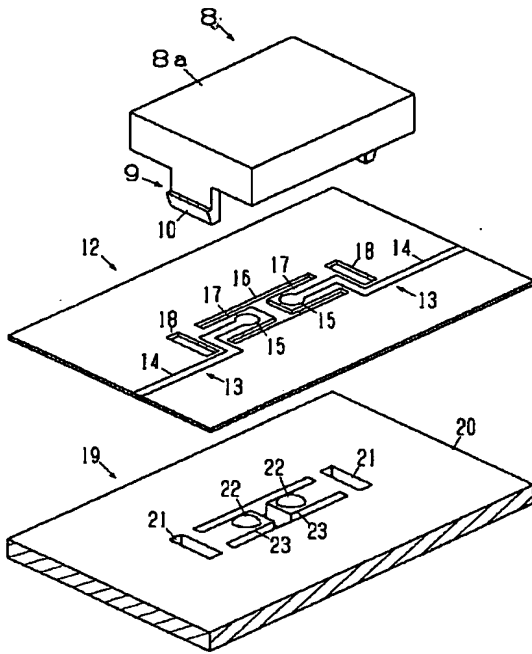
【符号の説明】

- 8 ケース体
- 9 弾性係止部（第一の係止部）
- 11 回路基板
- 12 可撓性配線板
- 19 計器ハウジング（ハウジング）
- 21 開口（第二の係止部）
- 23 弾性部

【図4】



【図1】



【図3】

